REMARKS

Reconsideration of this application is requested. Claims 8 and 15-26 are pending in the application subsequent to entry of this Amendment. Responding to the issues raised in the outstanding Official Action in the order presented, counsel affirms the election of claims 1-18, the claims of Group I. The election was made with traverse, as was correctly indicated by the examiner on page 2, last paragraph of the Official Action. Applicants will at the appropriate time request rejoinder of non-elected method claims 19-22 once the composition claims are allowed. Rejoinder is authorized by the Commissioner's Notice (1184 O.G. 86) implementing the Federal Circuit's decisions of *In re Ochiai*, 37 USPQ2d 1127 (1995) and *In re Brouwer*, 37 USPQ2d 1663 (1995).

The Abstract has been revised to a single paragraph and reworded to be consistent with current standards.

The claims have been amended thus the objection directed towards claim 1 as originally filed is no longer pertinent.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention and directed to preferred aspects of the described glass compositions. Four new independent composition claims, 23-26, are presented.

Claim 23 combines claims 1, 2, 3, 5 and 7, the content of Nb_2O_5 is limited to 0 to 3 % and the content of WO_3 is limited to 0 to 1 %. The limitations of the contents of Nb_2O_5 and WO_3 are based on page 11, paragraph [0026] of the description.

Claims 1, 2, 3, 5 and 7 are combined as new claim 24 in which the content of Nb_2O_5 to limited to 0.5 to 1.5 %. The limitation of the content of Nb_2O_5 is based on page 11, paragraph [0026] of the description. Independent claim 24 differs from independent claim 23 in that the range of the content of Nb_2O_5 is narrower than the range of the same in independent claim 23 and that the content of WO_3 is not defined.

New claim 25 combines claims 1, 5, 6 and 7 and the contents of Nb_2O_5 and WO_3 are limited like those in independent claim 23.

Claims 1, 5, 6 and 7 are combined as new claim 26 and the content of Nb_2O_5 is limited similarly to claim 24. Claim 26 differs from claim 25 in that the range of the content of Nb_2O_5 is narrower than the range of the same in independent claim 25 and that the content of WO_3 is not defined.

Dependent claims 8 and 15-18 remain and have been amended to depend from each of the new independent claims presented. Method claims 19-22 remain in the application, although not under active examination, to be rejoined with the composition claims when allowed.

Original claims 1-18, or various combinations of these claims, have attracted rejections of alleged anticipation based upon four separate documents. Considering the substantial revisions made to the claims, as discussed above, the examiner's concerns are believed to be no longer pertinent to the subject matter now under review. However, for the purposes of completeness the separate rejections are discussed as follows.

35 USC 102(b) based on Komorita US 4,120,732

The Examiner states that claims 1 to 6, 8 to 12 and 14 to 18 are anticipated by US'732. Since claim 7 defining "SiO_2 6 to 9 %" is not included in the claims rejected, new claims 23-26, which include the requirement of claim 7, are not the same as the description of US'732.

US'732 in col. 2, lines 52 to 54 states that "If the content of SiO_2 exceeds 5.5 %, the quantity of insoluble matters in the melt increases resulting in difficulty in obtaining a homogeneous optical lens". Claim 1 of US'732 requires that the upper limit of SiO_2 is limited to 5.5 %. Therefore, one skilled in the art reading US'732 cannot be motivated to incorporate more than 5.5 % of SiO_2 in a similar optical glass.

In contrast, in the inventions defined in claims 23-26, the content of SiO_2 is limited to at least 6 % but not more than 9 %, and other glass components are well balanced with SiO_2, so as to provide a glass having no problem with regard to solubility. Therefore, the inventions of independent claims 23-26 are patentable over US'732.

35 USC 102(b) based on Takahashi JP patent 54-90218

The Examiner states that all of the original claims 1 to 18 are anticipated by JP patent 54-90218. JP Patent 54-90218 has been discussed in the present specification, paragraph [0002].

As is shown in claim 1 of JP Patent 54-90218, the optical glass disclosed in JP Patent 54-90218 does not contain any Nb_2O_3 as an essential component and contains a large amount of WO_3 -- as large as at least 2 % but not more than 25 %.

In contrast, the optical glasses in independent claims 23 and 25 contain 0 to 1 % of WO_3 and therefore differ from the optical glass of JP patent 54-90218 in composition.

In their specification, page 11, paragraph [0026] applicant describes that WO_3 is a component that improves the glass in devitrification resistance when added in a small amount, but that when a large amount of it is incorporated, the absorption of the glass in the shorter wavelength region is intensified, which causes the glass to be colored. Since the optical glass in JP patent 54-90218 contains a large amount of WO_3, the absorption of the glass in the shorter wavelength region is intensified, so that the glass is colored.

Further, in the inventions of independent claims 24 and 26, the content of Nb_2O_5 is limited to 0.5 to 1.5 %, and the glasses of these inventions are improved in devitrification resistance by adding a small amount of Nb_2O_5. However, since the glass of JP patent 54-90218 contains no Nb_2O_5, the invention of JP patent 54-90218 cannot provide the above devitrification resistance effect.

For the above reasons, the inventions of independent claims 23 to 26, and the claims dependent from them, have patentability over JP patent 54-90218.

35 USC 102(b) based on Morey US 2,150,694

The Examiner states that original claims 1, 2, 5, 7 to 9, 11 and 13 to 18 are anticipated by US'694.

Claim 3 specifying that "$ZnO/(SiO_2 + B_2O_3)$ is more than 0 but not more than 2" and claim 6 defining "ZnO 1 to 7%" are not included in claims rejected. Both of independent claims 23 and 24 include the requirement of claim 3, and both of

independent claims 25 and 26 include the requirement of claim 6, hence there is no anticipation.

In his specification, page 6, paragraph [0012] applicant discloses that when $ZnO/(SiO_2 + B_2O_3)$ is in the range that is more than 0 but not more than 2, the glass is imparted with the desired high-refractivity and low-dispersion properties, and that the glass is improved in devitrification resistance.

Further, the specification, pages 8 – 9, paragraph [0017] discloses that the content of ZnO is preferably 1 to 7 %, and that when the content of ZnO is in such a range, the glass is imparted with the high-refractivity and low-dispersion properties.

Since US'694 does not disclose the above effects based on the numerical limitation of ZnO and $ZnO/(SiO_2 + B_2O_3)$, independent claims 23 to 26 are novel and inventive over US'694.

35 USC 102(b) based on Komorita JP patent 53-4023

The Examiner states that original claims 1 to 18 are anticipated by JP patent 53-4023. This rejection is no longer pertinent.

The disclosure of JP patent 53-4023 has an essential requirement that the optical glass must contain 0.1 to 25 % of HfO_2 as an essential component, as is clear in its single claim.

Further, JP patent 53-4023, page 2, upper left column, lines 8 to 14 states:

> "The present inventors have found it best to introduce HfO_2 into a B_2O_3-La_2O_3-containing glass as a component which has the effect of imparting high-refractivity low-dispersion properties to a high degree while improving stability and which can fully exhibit its effect since it has good solubility in the glass."

And, JP patent 53-4023 clearly describes that using 0.1 to 25 % of HfO_2 is the most essential requirement for attaining a high refractive index, low dispersion, stability and solubility.

In contrast to this citation, the optical glasses defined in independent claims 23 to 26, do not require the presence of HfO_2, and these glasses can accomplish high-

refractivity and low-dispersion properties, a refractive index nd of at least 1.875 and an Abbe's number νd of at least 39.5, even without containing any HfO_2.

In all of the optical glasses defined in independent claims 23 to 26, SiO_2, B_2O_3, La_2O_3 and Ta_2O_5 as essential components are co-present, and these glasses can accomplish the desired refractive index, Abbe's number and glass transition temperature in the absence of HfO_2. In contrast, the glass disclosed in JP patent 53-4023 includes some embodiments in which the content of SiO_2 and Ta_2O_5 is 0 %, that is, neither of these are present. JP patent 53-4023 does not specifically disclose a glass in which all of SiO_2, B_2O_3, La_2O_3 and Ta_2O_5 are present.

For the above reasons, independent claims 23 to 26 are both novel and patentable over JP patent 53-4023.

From the above discussion it will be apparent that the documents cited in the Official Action are no longer pertinent to the claims presented for examination. Reconsideration and allowance are solicited.

Attached hereto is a marked-up version of the changes made to the Abstract and claims by the current amendment. The attached page(s) is captioned **"Version With Markings To Show Changes Made."**

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT

ABSTRACT

[Disclosed is an] An optical glass having high-refractivity and low-dispersion optical properties and having a low glass transition point so that a heat-treating furnace can be operated for a long period of time.

The [present invention provides an] optical glass [having] has a refractive index nd of at least 1.875, an Abbe's number νd of at least 39.5 and a glass transition point Tg of 700°C or lower, [an optical glass which is a borosilicate glass comprising] and contains at least one [selected from] of La_2O_3, Gd_2O_3, Y_2O_3 or Yb_2O_3 and at least one [selected from] of ZrO_2, Ta_2O_5 or Nb_2O_5, [wherein the ratio (] with a weight ratio[)] of the total content of La_2O_3, Gd_2O_3, Y_2O_3 and Yb_2O_3 to the total content of SiO_2 and B_2O_3 [is] of from 3.2 to 5 and the [ratio (]weight ratio[)] of the total content of ZrO_2, Ta_2O_5 and Nb_2O_5 to the total content of SiO_2 and B_2O_3 is from 1.1 to 1.5[, and which has a refractive index nd of at least 1.875 and an Abbe's number νd of at least 39.5, and the like].

IN THE CLAIMS

8. (Amended) The optical glass of claim [1] 23, 24, 25 or 26, which has [a glass composition comprising, by % by weight, 5 to 10 % of SiO_2, 7 to 13 % of B_2O_3, 0 to 5 % of GeO_2, 0 to 15 % of ZnO, 30 to 60 % of La_2O_3, 0 to 30 % of Gd_2O_3,] 0 to 5 % of Y_2O_3[, 0 to 5 % of Yb_2O_3, 2 to 8 % of ZrO_2 and 13 to 19 % of Ta_2O_5, wherein the total

content of SiO_2, B_2O_3 and GeO_2 is 14 to 20 % by weight, the total content of B_2O_3 and ZnO is at least 9 % by weight and the total content of La_2O_3, Gd_2O_3, Y_2O_3 and Yb_2O_3 is 50 to 60 % by weight, and further wherein the total content of the above components exceeds 95 % by weight, the composition further contains, by % by weight, 0 to 3 % of Nb_2O_3, 0 to 3 % of WO_3, 0 to 3 % of Al_2O_3, 0 to 3 % of Bi_2O_3, 0 to 3 % of Ga_2O_3 and 0 to 1 % of Sb_2O_3, the total content of BaO, SrO, K_2O and MgO is 0 to 3 % by weight, and the total content of Na_2O, K_2O and Li_2O is 0 to 1 % by weight].

15. (Amended) The optical glass of claim [14] 23, 24, 25 or 26, wherein part of La_2O_3 is replaced with Gd_2O_3 and/or Y_2O_3[, the content of Gd_2O_3 is 0 to 30 % by weight, the content of Y_2O_3 is 0 to 10 % by weight, the optical glass containing 0 to 15 % by weight of ZnO, and further wherein the total content of ZnO and B_2O_3 is at least 9 % by weight, the optical glass having a glass transition point Tg of 700°C or lower].

16. (Amended) The optical glass of claim [14] 23, 24, 25 or 26, wherein part of La_2O_3 is replaced with Gd_2O_3 and/or Y_2O_3[, the content of Gd_2O_3 is 0 to 30 % by weight, the content of Y_2O_3 is 0 to 10 % by weight, the content of ZnO is 0 to 15 % by weight, the content of Nb_2O_5 is 0 to 3 % by weight] and the content of Li_2O is 0 to 1 % by weight[, the optical glass having a glass transition point Tg of 700°C or lower].

17. (Amended) A glass preform made of the optical glass recited in claim [1, 9, 10 or 14] 23, 24, 25 or 26.

18. (Amended) An optical product made of the optical glass recited in claim [1, 9, 10 or 14] 23, 24, 25 or 26.

(Amended) ABSTRACT

An optical glass having high-refractivity and low-dispersion optical properties and having a low glass transition point so that a heat-treating furnace can be operated for a long period of time. The optical glass has a refractive index nd of at least 1.875, an Abbe's number νd of at least 39.5 and a glass transition point Tg of 700°C or lower, and contains at least one of La_2O_3, Gd_2O_3, Y_2O_3 or Yb_2O_3 and at least one of ZrO_2, Ta_2O_5 or Nb_2O_5, with a weight ratio of the total content of La_2O_3, Gd_2O_3, Y_2O_3 and Yb_2O_3 to the total content of SiO_2 and B_2O_3 of from 3.2 to 5 and the weight ratio of the total content of ZrO_2, Ta_2O_5 and Nb_2O_5 to the total content of SiO_2 and B_2O_3 is from 1.1 to 1.5.